

Claims

1. A light emitting device comprising:
 - a light emitting element;
 - 5 a light conversion member including a phosphor material that is capable of absorbing light emitted from said light emitting element at least partially and emitting light in different wavelength; and
 - a heat dissipation member that is located in a side where said light conversion member is provided as viewed from said light emitting element.
- 10 2. The light emitting device according to claim 1, wherein said heat dissipation member has a flow path of a refrigerant.
3. The light emitting device according to claim 2, wherein said heat dissipation
15 member includes at least one pair of an inlet for admission of said refrigerant and an outlet for ejection of the refrigerant that is circulated through said flow path.
4. The light emitting device according to claim 3, wherein said heat dissipation
20 member is formed of a material that passes at least light from said light emitting element, or a material that passes light from both said light emitting element and said light conversion member.
5. The light emitting device according to claim 1, wherein said heat dissipation
25 member is formed of two plate-shaped members that form the flow path for flowing cooling fluid between them, and a plurality of said light emitting elements are mounted to be two-dimensionally arranged on a main surface of said heat dissipation member, wherein a plurality of protruding portions are formed in the surface of said plate-shaped member inside said flow path, and at least some of
30 said plurality of protruding portions are formed such that their centers are located between said light emitting elements and a substantially central part of said light emitting element.
6. A light emitting device comprising a light emitting element, a light conversion
35 member including a phosphor material that is capable of absorbing light emitted

from the light emitting element at least partially and emitting light in different wavelength, and a heat dissipation member, wherein

said heat dissipation member having a flow path of a refrigerant includes a first heat dissipation member that has a first flow path in a side where
5 said light emitting element is mounted, and a second heat dissipation member that has a second flow path in a side where light from said light emitting element is incident, the second heat dissipation member including said light conversion member.

10 7. The light emitting device according to claim 6, wherein said flow path includes a third flow path that connects said first flow path to said second flow path.

8. The light emitting device according to claim 7, wherein each or one of said first and second heat dissipation members includes a pair of an inlet for admission of
15 said refrigerant and an outlet for ejection of the refrigerant that is circulated through said flow path.

9. The light emitting device according to claim 8, wherein said first heat dissipation member, an insulating member, a supporting substrate, and said
20 second heat dissipation member are laminated.

10. The light emitting device according to claim 9, wherein said heat dissipation member has said inlet or outlet in at least one of main surface sides, and said insulating member and said supporting substrate have through holes that form
25 parts of said third flow path.

11. The light emitting device according to claim 10, wherein a conductive member that contains at least one element selected the group consisting of Au, Ag, and Al is coated on at least one of main surfaces of said insulating member.

30 12. The light emitting device according to claim 11, wherein one electrode of said light emitting element is electrically connected to the conductive member that is coated on coated on the at least one of main surfaces of said insulating member via a conductive wire, another electrode is electrically connected to said
35 first heat dissipation member.

13. The light emitting device according to claim 12, wherein said second heat dissipation member is formed of a material that passes at least light from said light emitting element, or a material that passes light from both said light emitting
5 element and said light conversion member.

14. The light emitting device according to claim 6, wherein each or one of said first and second heat dissipation members is formed of two plate-shaped members that form the flow path for flowing cooling fluid between them, and a
10 plurality of said light emitting elements are mounted to be two-dimensionally arranged on a main surface of said first heat dissipation member, wherein a plurality of protruding portions are formed in the surface of said plate-shaped member inside said flow path, and at least some of said plurality of protruding portions are formed such that their centers are located between said light
15 emitting elements and a substantially central part of said light emitting element.

15. A light emitting device comprising a heat dissipation member that is formed of two plate-shaped members that form a flow path for flowing cooling fluid between them, and a plurality of light emitting elements that are mounted to be
20 two-dimensionally arranged on a main surface of the heat dissipation member, wherein

a plurality of protruding portions are formed in the surface of said plate-shaped member inside said flow path, and at least some of said plurality of protruding portions are formed such that their centers are located between said
25 light emitting elements and a substantially central part of said light emitting element.

16. The light emitting device according to claim 15, wherein said plurality of protruding portions are arranged apart from each other in the bended manner
30 such that line segments that successively connect the protruding portions closest to each other repeatedly change their direction from a inlet part to a outlet part of said flow path.

17. The light emitting device according to claim 16, wherein at least some of said plurality of protruding portions are formed such that their centers are located between said light emitting elements.

5 18. The light emitting device according to claim 17, wherein said plurality of protruding portions are located at a substantially central part of and in the peripheries of the corners of the light emitting element.

19. The light emitting device according to claim 18, wherein a metal material
10 containing Au coats an attachment surface of said plate-shaped members.